

WHAT IS CLAIMED IS:

1. A method for manufacturing an optical fiber member comprising:
modifying at least one end of an optical fiber member; and
applying energy to the modified end of the optical fiber member to form a lens surface.
2. The method of Claim 1, wherein said modifying comprises removing material from said at least one end of the optical fiber member.
3. The method of Claim 1, wherein said modifying comprises etching said at least one end of said optical fiber member by subjecting said at least one end of said optical fiber member to an etching liquid.
4. The method of Claim 3, wherein said etching liquid comprises HF acid.
5. The method of Claim 1, wherein said optical fiber member comprises a material taken from the group consisting of glass, polymer and plastics.
6. The method of Claim 1, wherein said applying energy to the modified end comprises heating said modified end to form said lens surface.
7. The method of Claim 6, wherein said lens surface comprises a convex, concave or planer lens surface.
8. The method of Claim 1, wherein said modifying comprises removing material from both ends of the optical fiber member.
9. The method of Claim 8, wherein said heating comprises heating both ends to form a lens surface on each end.
10. The method of Claim 1, wherein said modified end has a first length, and wherein said applying energy comprises applying energy at a location along

said length to form said lens surface at a position on the modified end having an angle of between about 15° to about 20°.

11. The method of Claim 1, wherein said applying energy comprises exposing said modified end to a heat source.

12. The method of Claim 1, wherein said applying energy comprises moving said modified end to a spark.

13. A method for manufacturing a lensed tip optical fiber comprising:
providing an optically transparent cylindrical fiber;
etching a first end of said optically transparent cylindrical fiber to form a tip;
heating said tip to form a lens surface.

14. The method of Claim 13, wherein said optically transparent cylindrical fiber comprises a material taken from the group consisting of glass, polymer and plastics.

15. The method of Claim 13, wherein said etching comprises etching said optically transparent cylindrical fiber by subjecting said first end of said optically transparent cylindrical fiber to an etching liquid.

16. The method of Claim 13, wherein said etching liquid comprises HF acid.

17. The method of Claim 13, wherein said lens surface comprises a convex, concave or planer lens surface.

18. The method of Claim 13, wherein said etching comprises etching said first end and a second end of the optically transparent cylindrical fiber.

19. The method of Claim 18, wherein said heating comprises heating both said first end and said second end to form a lens surface on each end.

20. An optical fiber comprising:

a first lens surface formed on a first end of an optically transparent cylindrical fiber, said first lens surface formed by:

modifying at least one end of said optically transparent cylindrical fiber; and
applying energy to the modified end of the optically transparent cylindrical fiber.